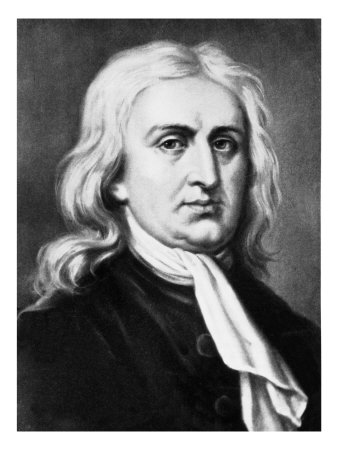
Newton’s Laws

**Main Idea #1: Newton’s First Law**

**Newton’s 1st Law states that an object in motion will remain in motion and an object at rest will remain at rest unless acted on by an unbalanced force.**

-If an object is moving at a constant speed, it could either have no forces on it or balanced forces.

-If an object is moving at a constant speed and it experiences an unbalanced force, it will accelerate.

-Inertia is an objects resistance to a change in its state of motion.

**Main Idea #2: Newton’s Second Law**

**Newton’s 2nd Law states that the acceleration of an object is directly proportional to the force and inversely proportional to the mass. The equation for this relationship is written like this:**

**Example #1:** A car is accelerating at 4 m/s^2 and has a mass of 500 kg. What is the net force that the car produces?

A=

=

= 4 x 500 = 2,000 N

M=500kg

=?

Using the equation for Newton’s 2nd Law, we find that the force that the car produces is equal to 2,000 Newton’s.

**Main Idea #3: Newton’s 3rd Law**

**Newton’s 3rd Law states that for each action there is an equal and opposite reaction. The equation for Newton’s 3rd Law can be written in like this:**

**=**

**Example #2:** If the same car in example one is accelerating at and has a mass of 500kg hits a squirrel with a force of 2,000 N, what force does the squirrel have on the car?

Because the force from object A on object B is the same as the force from object B on object A, the force the squirrel exerts on the car is equal to that of the cars, which is 2000 N.

**Additional Resources:**

<http://csep10.phys.utk.edu/astr161/lect/history/newton3laws.html>

<http://teachertech.rice.edu/Participants/louviere/Newton/>

<http://www.grc.nasa.gov/WWW/K-12/airplane/newton.html>